Internship proposition
One page max
M2 I3/0HNU 2024-25

Lab: CRCI2NA

team: 12 – Manipulation of lymphocytes

Name and position of the supervisor: Christelle Harly, CR CNRS

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Candidate: open to any candidate interested in epigenetic and transcriptional control of cell fate. This internship could be partly wet lab, depending on the candidate's interest (possibility to generate new epigenetic/transcriptional data).

Title of the internship:

Characterization of the ILC/cDC1 developmental divergence in mouse

Summary of the internship proposal:

Innate Lymphoid Cells (ILC) are recently discovered immune cells that play important roles in different biological processes, such as homeostasis and tumor survey. However, their development is still poorly understood. ILC develop in bone marrow and share early developmental stages with conventional type 1 dendritic cells (cDC1). Development towards ILC and cDC1 lineages is regulated by transcription factors (TF) that imprint successive layers of regulation at the epigenetic and transcriptional levels. Some TF are shared by the two lineages, other are lineage-specific. In this project, we will investigate whether shared TF play similar functions in the two lineages, or whether their functions are influenced by lineage-specific TF.

We will use previously generated datasets describing TF binding, and transcriptomic (RNA-seq) and epigenetic (chromatin accessibility, histone marks, CUT&RUN) changes during ILC and cDC1 development to explore the function of shared TF. In case we find that the TF of interest play distinct functions in ILC and cDC1, we will investigate the factors that may influence this lineage-specific functions (epigenetic landscape, enrichment for DNA binding motif for lineage-specific TF). Additional datasets may be generated depending on the candidate's results and interests. This analysis may identify novel TF that underly the developmental split between ILC and cDC1.

<u>Option(s) linked to the project:</u>
Data Analyst Profile